Policy Restructuring for Quality Improvement in Technical Education

Dr. Noeen Khaliq
Department of Humanities,
University Institute of Technology,
Rajiv Gandhi Proudyogiki Vishwavidyalaya Bhopal, Madhya Pradesh, India

Abstract – The quality aspect of technical education has never been so much decried and looked with criticism in recent times than it was ever before. To bring quality systems in technical education there are no shortcuts and no sure shot recipe. This paper aims to carefully analyse the total environment in which technical education system operates and the factors, which influence its working, before brining into practice major changes to bring quality.

Key words- Technical Manpower, QIP centres, Performance Appraisal Systems, Academic Autonomy, Technical Staff College.

I. INTRODUCTION

A major shift in the policy of technical education regarding management of institutions, staff development, institution development etc. is required. This shall make the environment of technical education system dynamic, flexible and vibrant. It shall introduce logical and systematic working in the system to meet the expectations of the stakeholders of the technical education system. As a consequence of this, the institutions shall have a long-term future vision, to grow and develop and be able to address the problem areas. It is not a direct step concerning with quality, but a prerequisite before quality is introduced at a grass root level working of the technical education institution.

II. EXPECTATIONS OF STAKEHOLDERS FROM TECHNICAL EDUCATION SYSTEM

a) Institutions to have clear and modern vision.
b) Modular, Flexible and client responsive education.
c) Convincing demonstration of quality.
d) Well defined value addition process.
e) Workable linkages with industry for mutual benefits.
f) System of incorporating and managing changes.
g) Proactive rather than reactive system.
h) Provide learning experiences, which assimilates real live situations of industry.
i) Produce pass-outs with appropriate skills/knowledge, which makes them competent enough to deal with every day situations in industry.
j) Institutions driven by intelligence and knowledge.

III. CONSORTIUM OF TECHNICAL EDUCATION INSTITUTES, INDUSTRY AND GOVERNMENT

To ensure quality first of all it is necessary that the programmes or institutions produce the type of technical manpower, which suits the industry. Unplanned growth of the technical institutions has caused great damage to the cause of quality.

A systematic plan with enough resources to forecast the demand of future technical manpower is required. Central government has an agency for Technology Information Forecasting and Assessment Council (TIFAC). On similar pattern, a consortium to forecast the future projections of demand and profile of technical manpower in various disciplines and at various levels is highly desired. The consortium shall maintain a computerised data and information base for planning and management of technical education. It shall synthesise and analyse the data for the benefit of its stakeholders.

Since industry, state government and technical education institutes, all will benefit from the work of such a consortium, therefore they will be the main stakeholders of the proposed consortium. This shall also makes the working of consortium more effective and result oriented. Besides forecasting the demand, the consortium should have the following objectives.

- Assist government in planning and for launching special schemes for training or entrepreneurship development etc.
- Promote industrialisation.
- Plan for capacity expansion i.e. new programmes/institutions.
- Suggest shortages in the selected fields.
- Carry out regular survey of industries and maintain data regarding employment of pass-outs of engineering/management institutions.
- Suggest for the profile/competencies in pass-outs required by the industry.
- Enhance and provide for effective collaboration between industry, academia and state government.
- Guide/suggest individual institutions for making their growth and further development plan.

IV.   GROOMING MANAGERS OF TECHNICAL EDUCATION

Many of the problems in respect of quality, which our technical education system is facing, are due to shortage of good managers of technical education. Present day managers are not able to see the rapidly changing horizon of technical education and they do not possess the requisite vision to foresee, plan, steer and lead the system. To overcome these lacunae, the following steps should be immediately taken:

- Future mangers of technical education should be identified from the teaching faculty on the basis of aptitude, ability to lead and manage. After proper grooming, there services should be utilised in directorates, regional offices, project units, institutions and staff development colleges.

- A proper orientation is required to give the managers of technical education, the vision and skills for managing the institutions of future.

- The managers of technical education should be given sufficient skills in institutional management, problem solving techniques, managing change, project management, quality assurance, TQM, team management, financial management, resource mobilisation, resource management, contracting/outsourcing and liaisoning with industry etc.

V.   INSTITUTION DEVELOPMENT

- All the institutions must carry out SWOT analysis.
- Each institution must have their vision and mission statements clearly defined and explained to all the staff.
- Each institution to have five-year plan for growth and development prepared in line with state policy of technical education and on the basis of their local environment. The plan considering institutes mission would project institution's position after five years.

VI.   STAFF DEVELOPMENT

Few institutions identified as QIP centres and NITTTRs have been entrusted with the task of staff development. The need for organisation of programmes is not demand driven. QIP centre or NITTTR decides organisation of most of the programmes on their own. The training in high tech and emerging areas is lagging far behind and post programme feedback is not normally taken to measure the usefulness/effectiveness of the programme.

There are two ways to improve upon this system.

a) A Technical Staff College (TSC) should be opened in each University, which may act as a nodal agency to coordinate the total activity of staff development programmes. The college shall have training facilities in selected areas and for those programmes in which the college does not have faculty or expertise, it will collaborate with prominent training organisation at national/international level. The persons selected from engineering colleges and specially trained, shall become the resource faculty of the college. A college under the technical education system shall be directly responsible and more

accountable in organisation of staff development programmes. Its performance can easily be monitored, evaluated, controlled and directed towards providing better programmes. The objectives of the Technical Staff College (TSC) are:

- To provide training to technical staff for enhancing the technical skills, especially in hi-tech and emerging areas.
- To provide skills in liaisoning with industries.
- To provide skills in design of short term continuing education programmes.
- To develop multi-media based self-learning material.
- To provide support and guidance in development of laboratories.
- To develop curriculum in coordination with industry.
- To train future managers of technical education.
- To provide skills in management and establishment of Total Quality Management (TQM) system.
- To provide skills in consultancy, testing calibration services etc.
- To help institutes in preparation development and growth plans.
- To train staff in maintenance of machines and equipment.
- To arrange for training in areas, where the college does not have expert faculty or resources.

b) Individual institutions, if having expertise and infrastructure in selected areas, should be given freedom to organise programmes for staff development. Many of the Engineering Colleges have excellent facilities in certain fields, which can be utilised for training.

In addition to this, there is a need for well-defined staff development policy. The proposed policy should address the following issues:

- Clearly defined career growth plan for each & every category of post. This is very much required to avoid creeping of frustration and stagnation in the system.
- Aspects like quality of teaching, liaison with industry, consultancy, testing etc. should be given due importance.
- Clearly defined performance appraisal system, where student's feedback on faculty's performance and peer review is taken into account.
- Instead of generalisation, the area of work for a particular faculty should be allocated at the beginning itself on the basis of their individual choice and the demand/priorities of the department /college.

VII. REMOVING GOVERNMENT CONTROL

Too much government control slowdowns the process of development and restricts the creativity in planning. Therefore, to give more freedom to the system and institutions with corresponding accountability and responsibility, government control must be loosened. Autonomous institution as well autonomous bodies (i.e. directorates/regional offices) to look, after the management of technical education on the pattern of Higher Education Funding Council (HEFC) in UK are the need of the time.

VIII. OPTIMUM UTILISATION OF HUMAN RESOURCE

It has been the experience that human resource is given the least importance in any endeavor, our system makes. Major International and National projects become unsuccessful because of the management by incompetent persons. In most of the activities whether they are conducted or organised at institutions or offices of technical education system, seniority is given much importance than merit or ability to execute the work. This has to change, if modern concepts of management are to be followed.

Utilisation of human resource is very poor in engineering institutions. The basic fault is in the planning done for deployment of human resource.

The factors, which contribute to poor utilisation of human resource, are:

- Presently followed curriculum design process is much to blame for poor utilisation of human resource. According to the process, the expert/teachers of the course decide the content to be taught in each course and what portion is to be covered through lectures and laboratory work. Even if few practicals are there, which require only a portion of whole term, the practical portion is given a separate identity of laboratory, because of which a separate space, separate instructor and a separate skill assistant is

required. Therefore curriculum should be designed in totality; laboratory portion of one or more subjects can be clubbed together to save space and manpower.

- Recruitment of manpower should be carefully planned. Persons with expertise in more than one trade should be recruited, so he/she is able to manage conduction of experiments in more than one laboratory. When a particular course is not offered in a term/semester, the instructors/skilled assistant can be deployed for full term/semester to another laboratory for conduction of experiments.

- All the staff in technical education institutes should not be permanently employed. It is suggested that, out of the total staff of all categories in an institution 40% should be permanent, 30% on contract and remaining 30% on visiting basis (Paid on hourly basis).

IX. AUTONOMOUS AND NETWORKED INSTITUTIONS

To offer greater flexibility in programmes as per the demand of local clientele, academic autonomy to institutions must be given. Similarly with large scale availability of better mode of communication like internet, telephones and fax etc., institutions must be encouraged to share their resources (Laboratories, staff etc.). A large-scale network can be envisaged, where the resources of the institution are listed and their terms of availability are shown.

X. TOTAL QUALITY MANAGMENT

Preparation of a well drafted and agreed quality charter by which all technical institutions should abide and on the basis of which the institution should be accredited or bench marked in future. This requires introduction of quality systems and approach of Total Quality Management (TQM) in technical education. The process of introducing, implementing and managing Total Quality Assurance system and the activities which should be covered under Total Quality Management (TQM) need to be focused in research as well as implementation. The application of ISO 9000 provides a means of operating Quality Management System in technical education, while application of TQM integrates social system with quality system through the adoption of managerial processes which provide a focus on customer needs, employee needs and the needs of the stakeholders of the organisation.

XI. MODERN MANAGMENT TECHNIQUES

The last decade has seen profound changes taking place in the field of science and technology, which is gradually changing our life style, our way of working etc. The field of technical education has not been left untouched by these changes and particularly by the great revolution that has taken place in information technology. It has given whole new perception to the educational policy makers.

The time is now ripe for doing serious home work and making drastic changes in the technical education system. The fore most urgency here is to free the system from Government clutches. Any feeder system meant for providing key human resource input to the industry should have the same characteristics as of industry and should operate in the same environment to feel the push and pulls, ups and downs. The system must be flexible, dynamic and market driven to effectively carry out the value addition process and moreover it must have the right kind of sensing mechanism to sense the pressure that exists in a competitive environment. The technical or any other educational system for that matter must be interfaced with the industry and society to absorb and incorporate any changes that occur there as fast as possible. The output of the system should always match the expectations of these two major stakeholders. The involvement of industry and society should play major role in policy making, curriculum designing and training of students.

The institutions after being freed from Government control will really have to exert themselves to become a self-sustaining organisation geared to meet the demands of industry and society. The exercise is painful as institutions were not meant to operate in such environments and to change a legacy of 100 years require tremendous efforts and courage. The change process does not have any fixed procedure to copy and no rags to riches story to emulate. The basic principle of management, which is being taught since time immemorial in engineering and management programmes and never thought to be fit for application in educational and institutional management are to be studied carefully and applied rationally to re-engineer the whole system. The modern management is buzzing with many new techniques like Business Process Engineering (BPR), Enterprise Resource Planning (ERP), Concurrent Engineering, Just-In-Time (JIT), MIS, Contracting, Knowledge Management, Team Working, Total Quality Management (TQM), Bench Marking, SWOT Analysis, Pro-active Systems etc. These new techniques have helped industry in a big way, but nobody has thought to systematically apply these in solving our problems. Though our professors and students are well acquainted with these techniques but it is always the conventional prevailing culture which dominates the

inside working of institutions. With rising resource crunch, better management of our assets is a demand of time. The institutions also have to shed its serene entity and will have to become more accountable and answerable to the society.

The Government still being the major provider of the fund can grant full administrative, financial and academic autonomy to selected institutions in return for definite results.

Some of the modern management techniques are described below, which if judiciously applied to technical education system, can do wonders to the system.

XII.   CONCLUSION

The education and training activity does not experiences, the kind of pressures, a manufacturing industry experiences, but with less of Government funding in future for education and training, the trend of privatisation is increasing. This is forcing the engineering education and training institutions, to compete both on quality and price, in a result-oriented climate. The clients of education and training will also demand in future, more accountability, satisfaction and value for money. It is thought here that the major shift in policy making of technical education recommended in this paper shall be able to provide the much-needed quality thrust in technical education system.

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